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14. ABSTRACT

The project consists of the following continuing activities:

- Develop and implement Pediatric Internet Telemedicine Homecare study to assess efficacy of low bandwidth monitoring, management and treatment in the care of childhood cancer and chronic diseases.
- Develop and implement proof of concept study for genetic counseling delivered from a distance via telemedicine in a multi-center environment.
- Develop and implement an interactive intelligence search and representation system for mining disease information to aid in proper diagnosis.
- Upgrade existing hardware and server environment to replace aging equipment and maintain a state-of-the-art data and informatics infrastructure.

The Advanced Cancer Detection Center has been successful in developing and implementing a variety of leading edge technologies over the past five years. We plan to continue developing new technologies as well as extending existing technologies that contribute to the improvement in quality of overall patient care and public health in its final year.

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INTRODUCTION:

The **Advanced Cancer Detection Center** (ACDC) of the H. Lee Moffitt Cancer Center and Research Institute at the University of South Florida received initial funding in October 1997. (DAMD17-98-1-8659) In 2001, funding that was appropriated in FY00 and FY01 was awarded separately to the University of South Florida for the project period 2001-2006. (DAMD17-01-2-0056). In 2006, the project was granted a no cost extension based upon the following continuing activities:

- Develop and implement Pediatric Internet Telemedicine Homecare study to assess efficacy of low bandwidth monitoring, management and treatment in the care of childhood cancer and chronic diseases.

- Develop and implement proof of concept study for genetic counseling delivered from a distance via telemedicine in a multi-center environment.

- Develop and implement an interactive intelligence search and representation system for mining disease information to aid in proper diagnosis.

- Upgrade existing hardware and server environment to replace aging equipment and maintain a state-of-the-art data and informatics infrastructure.

This report provides a statement of progress on these tasks as well as describes the tasks for the FY07-08 fiscal year which is the planned final year of the project.

BODY:

Overview:

The Advanced Cancer Detection Center has become a significant component of the infrastructure in that it provides a stimulus for research development and promotes inter and intra programmatic collaborations. The Advanced Cancer Detection Center supports pilot studies that can lead to peer-reviewed extramural funding.

The ACDC has addressed the goals identified in its appropriations language through studies that target the discovery of molecular and genetic markers of cancer risk, the identification of individuals at high risk for cancer through screening, and the testing of methods to prevent cancer. In addition, the ACDC created a technology base that provides online video streaming, video supported web casting and teleconferencing and the development and application of expert systems. The success of these efforts has led to advances in cancer detection (publications) and the development of systems that have attracted additional peer-reviewed funding. The ACDC has received supplemental funding for a conference on molecular oncology and biomarkers which has been accomplished and a report detailing this activity has previously been submitted.

Recognizing the great success of this effort, the clinical focus of the Advanced Cancer Detection Center has transitioned to other funding sources, most notably the Community Clinical Oncology Program Research Base (described below). The Moffitt CCOP Research Base develops studies

focused upon symptom management and quality of life. It is an appropriate successor to the ACDC in that it has continuing peer-reviewed funding from the National Cancer Institute and incorporates a multi-tiered review process that includes both the CCOP Research Base investigators and a review by the National Cancer Institute.

The no cost extension has allowed the ACDC to pursue primarily advanced technologies and health informatics issues that are necessary to keep the infrastructure relevant to today's technologies and their application. The technology application phase to clinical trials and related studies has been funded with independent grant support from the National Institutes of Health. As well, the telegenetics initiative will require additional technological development to promote its capacity to become a self supporting stand alone project when the ACDC funding ends and new funding opportunities are being pursued.

Moffitt CCOP Research Base (PI:Krischer)

The H. Lee Moffitt Cancer Center received funding by the NCI in June 2000, and refunded in 2005, to develop a research base as a mechanism for Community Clinical Oncology Programs to access cancer control clinical trials. NCI funded CCOPs, direct affiliates and Moffitt affiliates are eligible to participate in the Moffitt CCOP Research Base. Membership is based on continued funding as an NCI CCOP with satisfactory performance measured by accrual and data quality. The CCOP Research Base provides a technological base for clinical trials that are reviewed, approved and funded by the National Cancer Institute's Division of Cancer Prevention. Thus clinical studies have been transitioned from the ACDC to the NCI in terms of development of new studies, their implementation and evaluation.

The goals of the Moffitt CCOP Research Base are to:

- Develop cancer control trials of high scientific merit for implementation in the community setting.
- Provide community investigators an opportunity to participate in NCI-supported cancer control clinical trials.

The following CCOPs have formal affiliations with the Moffitt CCOP research base:

- Bay Area Tumor Inst. CCOP
- Beaumont CCOP
- Florida Pediatric CCOP
- Cancer Research for the Ozarks CCOP
- Columbus CCOP
- DC United MBCCOP
- LSU – Shreveport MBCCOP
- Medical College of GA MBCCOP
- MeritCare Hospital CCOP
- Nemours – JAX (direct affiliate)
- Northwest CCOP
- Our Lady of Mercy (Direct affiliate)
- San Juan MBCCOP
- Scott & White Hospital CCOP
- So. Texas Pediatric MBCCOP

- Southeast Cancer Control Consortium CCOP
- St. Louis/Cape Girardeau CCOP
- Stroger Hospital of Cook County MBCCOP
- University of Florida – Shands (direct affiliate)

Some clinical studies are the result of pilot development funded by ACDC projects. All are approved by the internal advisory committee and then reviewed and approved by the National Cancer Center before activation. The National Cancer Center, Division of Cancer Prevention provides the scientific review for all clinical studies conducted under this mechanism after review by ACDC leadership and recommendations to support the studies. Examples of current studies are:

- Glutamic Acid to Decrease Vincristine Toxicity in Children with Cancer
- Phase II randomized, double-blinded study of an antiemetic pump, using Benadryl®, Ativan® and Decadron® (BAD), for children receiving moderately or highly emetogenic chemotherapy (HLMCC 0503)
- An Open Label Randomized Phase II of an Appetite Stimulant, Cyproheptadine Hydrochloride (*Periactin*®), With and Without a Nutritional Supplement, PediaSure, on Weight in Children with Cancer/Treatment Related Cachexia (HLMCC 0702)
- Prevention of Cancer/Treatment-Related Cachexia in Children Receiving Moderate to Highly Emetic Chemotherapy (HLMCC 0703)
- Modafinil to Improve Neurocognitive Deficits in Children who Received Cancer Treatment Affecting the Central Nervous System (HLMCC 0707)
- Melatonin and sleep hygiene for the treatment of insomnia following cancer therapy in children: A Phase II randomized double blinded cross-over study (HLMCC 0708)
- Risperidone for the Treatment of Cerebellar Mutism Syndrome (HLMCC 0709)
- Stress management therapy for patients undergoing chemotherapy
- Thyroid function & breast cancer: A pilot study to estimate the prevalence of thyroid dysfunction in women diagnosed with breast cancer and the magnitude of change in thyroid function post-chemotherapy
- Randomized double blinded study of an antiemetic pump for adults receiving moderately or highly emetogenic chemotherapy
- A Phase II Placebo-Controlled Trial to Determine the Effect of Losartan (Cozaar) on Pulmonary Toxicity in Patients Scheduled to Receive Radiation Therapy for Non-Small Cell Lung Cancer

In fiscal year 2006-07, the Advanced Cancer Detection Center has focused on further development of its Telemedicine and Informatics initiatives as a means to further its education objectives contained in enabling legislation. Those technologies already developed as part of the ongoing Moffitt Cancer Network will be expanded to other venues and further developed to achieve the following objectives in fiscal year 07-08:

- **Task 1.** Continue development and application of new technologies for patient reported outcomes and effective mechanisms to enhance patient-provider communication.
- **Task 2.** Develop and implement proof of concept study for genetic counseling delivered from a distance via telemedicine in a multi-center environment.

- **Task 3.** Provide for orderly phase out of ACDC projects and activities and transitioning to other mechanisms for continued support.

KEY RESEARCH ACCOMPLISHMENTS:

The material that follows in this section summarizes the key research accomplishments associated with each project and task outlined in the appropriate approved Statement of Work for ACDC approved projects during the 06-07 year.

- **Task 1.** Develop and implement Pediatric Internet Telemedicine Homecare study to assess efficacy of low bandwidth monitoring, management and treatment in the care of childhood cancer and chronic diseases.

  The research has focused on the development of new platforms for sharing video and audio telecommunication between patients (or study participants) and health care providers. Earlier technological advances employed interactive voice response systems which have now seen clinical application in projects funded by the National Center for Research Resources:
  Interactive Voice Response Diary and Objective Myotonia Measurement as Endpoints for Clinical Trials in Nondystrophic Myotonia, 59th American Academy of Neurology Meeting, Boston, MA, April 28-May 5, 2007.

  Interactive voice response diary (IVR) system and quantitive myotonia measurement were evaluated as potential outcome measures for nondystrophic myotonias (NDM) clinical trials

  NDM is a heterogeneous group of neuromuscular disorders caused by mutations in skeletal muscle sodium and chloride channels. There are no established treatments for myotonia despite the availability of agents that deserve careful study. A reliable outcome measure in myotonia is necessary for clinical trials.

  Twenty-four subjects enrolled from 6 US, UK, and Canadian sites were categorized as myotonia congenita (MC), paramyotonia congenita (PMC), and other myotonic disorders(OMD). Three possible myotonia measures were assessed: relaxation time following maximum voluntary isometric contraction of the finger flexors (QMA); myotonic discharges on needle EMG, and Interactive Voice Response Diary (IVR), where participants phoned in weekly for 8 weeks to rank severity of stiffness, pain, weakness, and fatigue on a scale of 1-9 and reported frequency in days.

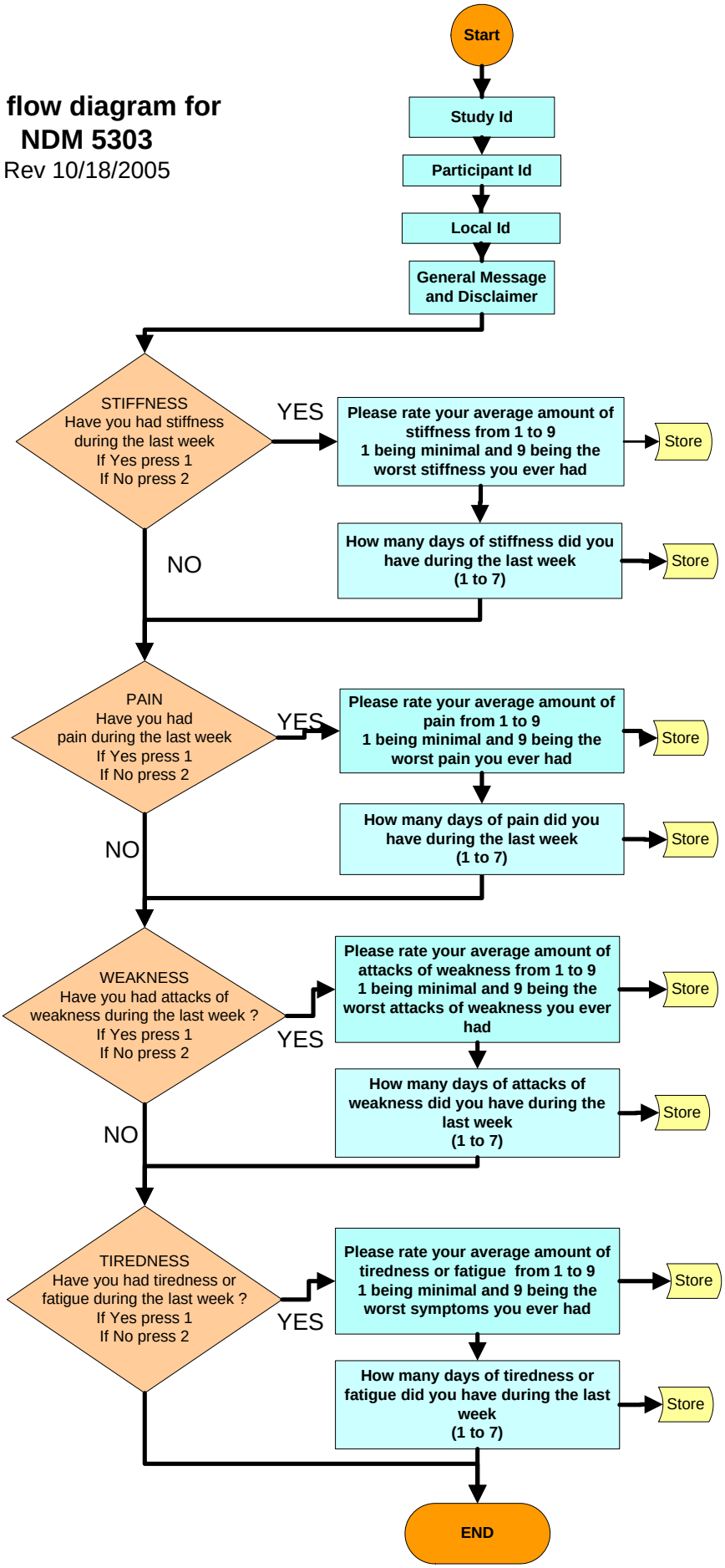
  Initial clinical diagnosis: 13MC; 7PMC (4 genetically confirmed); 3OMD. Myotonic discharge potentials were seen in all subjects with no difference in their degree and location among the subtypes. QMA testing showed a delay in relaxation in 4/20 subjects with positive hand grip myotonia. Of the 14/24 subjects who phoned weekly for more than 6 weeks the IVR data showed frequency for the population was stiffness in 97%, pain 63%, weakness 50%, and fatigue 65%. The severity by symptoms was stiffness 4.09 $\pm$0.42; pain 2.34$\pm$0.28; weakness 2.16$\pm$0.39; fatigue 2.74$\pm$0.41. The average number of days per week

participants experienced symptoms was stiffness 5.01, pain 3.27, weakness 2.12, and fatigue 2.94.

The IVR data showed consistency in self-rated clinical symptoms related to myotonia, making this a potentially useful endpoint for future clinical trials. Quantitative myotonia measure is a less sensitive outcome measure since only a minority showed abnormal results.

The IVR system implemented a structured algorithm for utilizing key pad data collection from touch tone phones for study related data capture tasks. The above absracts describes the automated implementation of the following algorithm:

IVR flow diagram for
NDM 5303
Rev 10/18/2005



While, as this abstract describes, the IVR technology has been very successful, well accepted and robust in its application, the ACDC has pursued the extension of this technology investigating the utilization of cell phone technology for patient reported outcomes.

The cell phone platform offers several advantages over the IVR system that we sought to exploit. Among them is the use of the screen geography to allow visual scales of severity. As well, since video capture is becoming ubiquitous, this platform allows for the capture of digital images and videos as indicators of patient health care status. An example of the implementation of the same IVR algorithm described above on the cell phone platform is as follows:

For each question, the participant selects the answer by using the left and right arrow keys and then pressing the Choose button. The next question is shown subsequently.

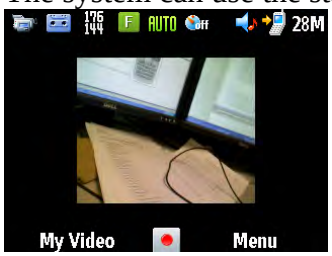
Qualitative scale data is collected by using the left and right arrow keys to move the indicator. This data is then internally transformed to a quantitative scale measure for transmission.

Numeric responses can be entered directly or can be selected from a list of predefined responses.

After all questions have been answered a Thank You message is shown. The user presses OK to close the application. The form data is sent automatically via text message with no further action required from the patient.

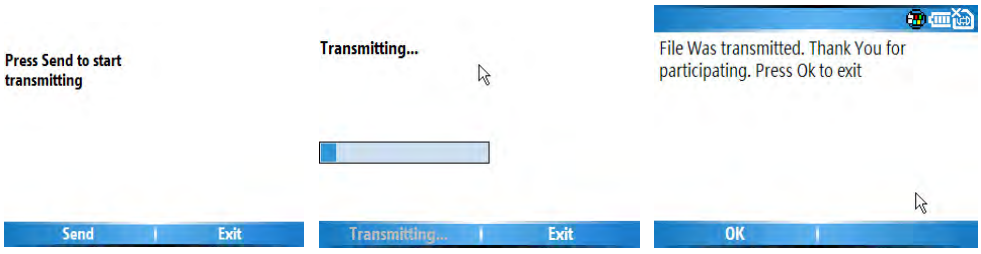
A video application is also relatively easy to implement as well.

The system can use the standard video interface of the telephone.



This is an example of the standard video interface of a typical cell phone. Video controls are whatever the phone typically uses. An appropriate subject can then be recorded:

The video resolution is adequate for many clinical applications. While not precise enough for pathological diagnosis, it is sufficient to describe symptoms, or changes in symptoms, in many situations. Our pilot work was been applied to the area of periodic paralysis where characteristic muscle tremors or eye movements can easily be visualized.

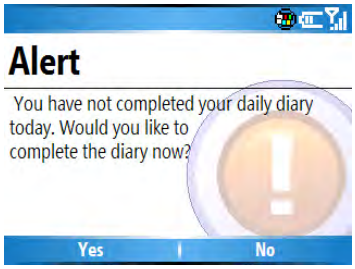


A B C

The application that guides the user through simple steps to transmit the video as panels A-C describe. The video stream is sent through TCP/IP connections using the internet to a web server. The Internet is the preferred method to transfer video. Text data can be sent via an SMS gateway which is very inexpensive.

The application requires Windows Mobile 5 smart phones and universally available cellular service. It can be installed locally on the phone or it can be downloaded or installed using micro SD card distributed by a central site. If it is preloaded on an SD card, the user simply inserts SD class card into the device and the Installer will automatically load. When user is prompted to choose the location of installation, Device (as opposed to SD card) should be chosen.

The application can also be configured to respond to prompts sent out by a central computer. Thus if there is the need to poll individuals to collect data at predefined time periods, the application can respond to prompts which can alert the respondent to complete the needed data form. For example, an alert can be programmed into the system to prompt the data collection step.



- **Task 2.** Develop and implement proof of concept study for genetic counseling delivered from a distance via telemedicine in a multi-center environment.

In conjunction with the Florida Cancer Genetics Network (FCGN), a network of eleven sites providing genetic counseling throughout the state of Florida, we have implemented a proof of concept study for delivering genetic counseling via telemedicine in a multi-institutional environment. The FCGN formerly based at the Moffitt Cancer Center, has now been transferred to the Division of Epidemiology and Bioinformatics where the ACDC funding is maintained. The FCGN was developed initially under Advanced Cancer Detection Center funding. The Genetics program at the Moffitt Cancer Center recently concluded a proof of concept for genetic counseling via telemedicine that showed promising results. The proof of concept was designed in such a way as to assess the technology as well as the patient and counselor's resistance to or acceptance of the delivery mode. The patient and counselor were physically located in the same building, although the encounter took place via telemedicine with the use of audio and videoconferencing software. The FCGN is now a web-based multicenter telegenetics service.

We developed the first internet-based system for cancer genetics risk assessment, genetic counseling and research registry participation. The system automates collection of the family and personal medical history information required for these processes. Data may be 1) entered online or 2) entered on paper forms that can be faxed into a web server for direct (automated)

data entry accomplished within minutes. Once entered, data is available for viewing, editing and printing via a secure website. The system generates a family pedigree and risk calculation that can also be viewed or printed from the website. For research initiatives, data in the system can easily be queried to determine the number of individuals available who meet specific eligibility requirements. Authentication and authorization features allow easy access to all data for which the user has permission, while restricting all other data from access. Web access to the system requires a standard web browser (such as Microsoft Internet Explorer version 6.0 or higher) and use of free encryption software available on the internet. The system has two main uses – 1) it automates the data collection, pedigree-drawing and risk assessment procedures of clinical genetic counseling for hereditary cancer susceptibility quickly and easily and 2) it facilitates enrollment of individuals with high cancer risk in a registry designed for individuals who are interested in participating in cancer research studies. The internet-based design of this system makes it accessible to cancer genetics centers around the world.

Our current efforts are to extend the scope of the system to include multiple centers as well to assess efficacy using well defined tools to detect differences in knowledge transfer and patient outcomes relating to overall state of mind post counseling. This extends the current capabilities of the Cancer Network to make scarce resources more widely available to targeted populations and health care providers. In addition, we are exploring the extension of this effort to include pediatric genetics screening and counseling and have developed an extension for neurofibromatosis, which is a programmatic initiative of the DoD.

- Task 3. Develop and implement an interactive intelligence search and representation system for mining disease information to aid in proper diagnosis.

The research direction has focused on coding systems for data representation for data mining. The notion is that sophisticated data mining approaches are dependent upon data representations and unless there is some commonality, or equivalence mapping, between coding systems, data mining approaches will be severely restricted. This effort is jointly being pursued by our ACDC project as a precursor to data mining and in connection with our Rare Diseases Data Technology and Coordinating Center where we find direct clinical applicability. An example of some of our work that has been presented is as follows:

Rachel L. Richesson, PhD, MPH, College of Medicine, University of South Florida, Department of Pediatrics, 3650 Spectrum Blvd., Suite 100, Tampa, FL 33612
The lack of comparable data is a great obstacle for community health assessment activities. The need for health data standards remains a barrier to true interoperability across healthcare information systems, and limits opportunities to improve patient safety and public health. There are multiple layers of standards – including those that dictate the structure of databases and electronic messages (e.g., PHCDM, HL7), and terminologies or codesets (e.g., SNOMED CT, ICD-9) that are the "values" which are inserted. Public health researchers and decision-makers need to utilize and share health data from many knowledge domains, including vital signs, clinical findings, adverse events, mortality and morbidity data, medications, medical interventions and procedures, laboratory results, genetic data, and data from special procedures such as EKG and EEG. Consequently, there are many candidate standards and organizations involved in identifying health data standards. A generic overview (from the published literature) of methods for evaluating data standards will be presented. Knowledge domains that are important to public health, and the leading standards in each

of those domains will be discussed. Finally, public resources for accessing and understanding data standards relevant to public health will be shared. APHA, 2006.

Standard Terminology on Demand: Facilitating Distributed and Real-time Use of SNOMED CT During the Clinical Research Process

Rachel Richesson, PhD, Ken Young, Heather Guillette, M, Mark Tuttle, FACMI, Michael Abbondondolo, Jeffrey Krischer, PhD

Abstract:
The NIH roadmap endorses the use of data standards in clinical research that are compatible with health care data standards. To facilitate standards use, members of the Rare Disease Clinical Research Network have developed tools to support study investigators and research staff to code clinical research data using SNOMED CT at the point of research. This tool is customized to help the user will find desired and appropriate SNOMED CT concepts quickly.

Poster Proposal:
One goal of the Rare Disease Clinical Research Network (RDCRN) is to encourage data sharing and use of standardized data. To this end, the network (via a Data and Technology Coordinating Center, DTCC) is committed to the use of data standards, including SNOMED CT, the Consolidated Health Informatics (CHI) initiative's recommended standard for diagnoses, problem lists, procedures, and anatomy. The DTCC has designed tools that support the collection of high quality data and encourage adherence to data standards. This poster will give an overview of the process and automated tools for accessing, searching, and navigating SNOMED CT real-time, at distributed and remote clinical study locations. As study data is entered into a secure web-based data collection system via on-line Case Report Forms, researchers have real-time access to a remote (commercial) terminology host that maintains SNOMED CT updates. The custom interface allows them to search for specific terms or browse the terminology's native structure. Additionally, to simplify the coding task, only context-relevant subsets of SNOMED CT are presented. In theory, the coding should be more accurate if it is generated by the individual identifying the concepts or making the observations. These browsers make the conceptualization of the SNOMED CT structure and term navigation intuitive for the user. Additionally, these browsers can be designed to subset only "reasonable" concepts from the terminology and are built for usability. The usability and intuitive design of this tool eliminates the need for researchers to study the SNOMED CT terminology structure, and could increase compliance and quality of coding. These tools should reduce the time and complexities of the coding tasks, thereby reducing the burden of standards use on the research team. Close to 100 investigators and research staff representing over 15 studies in the Rare Disease Network have been trained on this tool. After RDCRN studies begin collecting data in March 2006, we can report feedback and preliminary evaluation data on this tool.

JAMIA, 2006

This research is funded by the National Institutes of Health RR019259.

Variation of SNOMED CT Coding of Clinical Research Concepts among Coding Experts
JAMES E. ANDREWS, PHD, RACHEL L. RICHESSON, PHD, MPH, JEFFREY KRISCHER, PHD

Objective: To compare consistency of coding among professional SNOMED CT coders representing three commercial providers of coding services when coding clinical research concepts with SNOMED CT.
Design: A sample of clinical research questions from case report forms (CRFs) generated by the NIH-funded Rare Disease Clinical Research Network (RDCRN) were sent to three coding companies with instructions to code the core concepts using SNOMED CT. The sample consisted of 319 question/answer pairs from 15 separate studies. The companies were asked to select SNOMED CT concepts (in any form, including post-coordinated) that capture the core concept(s) reflected in the question. Also, they were asked to state their level of certainty, as well as how precise they felt their coding was.
Measurements: Basic frequencies were calculated to determine raw level agreement among the companies and other descriptive information. Krippendorff's alpha was used to determine a statistical measure of agreement among the coding companies for several measures (semantic, certainty, and precision).
Results: No significant level of agreement among the experts was found.
Conclusion: There is little semantic agreement in coding of clinical research data items across coders from 3 professional coding services, even using a very liberal definition of agreement.
J Am Med Inform Assoc. 2007;14:497–506.

These examples (Drs. Richesson and Andrews are funded by the NIH) of the applicability show the extent of the coding problem such that even if semantic and syntactic relationships were defined though data mining efforts, the likely result would be very limited since the coding systems are not comparable across users and sites. We tested this in organizations that were professional coding groups to determine whether training was the issue or the lack of structured data.

Dr. Rachel Richesson, a trained health informaticist in collaboration with other faculty at USF is also developing a parallel study to be submitted to the National Library of Medicine for extramural funding.

- **Task 4.** Upgrade existing hardware and server environment to replace aging equipment and maintain a state-of-the-art data and informatics infrastructure.

The ACDC has continued to replace outdated equipment as well as add new technologies that foster new research. When completed the primary network infrastructure will consist of a gigabit switched network connected to Internet2 through redundant sonic wall firewalls. Backup and storage systems are also being upgraded. The current version of Netbackup (running on Sun Solaris) has been purchased in conjunction with a SUN L500 Tape Library. This will aid significantly to ensure enterprise backups are secure and reliable. The tape library and Netbackup system is connected to an upgraded Fiber Channel 2 Storage Area Network (SAN).

The Storage Area Network consists of redundant FC2 McData Switches and SUN 6140 Fibrechannel arrays in a RAID 5 configuration. Each machine connects redundantly to the SAN and can be allocated space on an as needed basis. Netbackup and the tape array mentioned above are connected directly to the SAN and backups are done directly over the high speed SAN when possible. This greatly increases our ability to adjust rapidly to surges in demand of storage so common in today's IT world.

Upgraded Oracle production and development servers have been purchased and are being installed. Upgraded versions of Oracle have been secured as well. Once installation of the new system is complete, the existing database environment will be migrated from the outdate servers to the new ones. Sun T2000s have been purchased to house Oracle.

Upgraded SAS production and development servers have been purchased and are being installed. The new Sun V4500s will provide a significant improvement in analysis times.

Primary and Backup Domain Controllers are being upgraded to new Dell Poweredge 1950s and Window 2003. This will allow us to utilize updates to active directory and the new security measures within Windows 2003. Exchange 2003 is being implemented in concert with the upgrade of the domain controllers.

Web production, certification, and development servers are being upgraded. With the ever increasing influx of .Net technologies and the subsequent integration of the technologies into Windows 2003, it is prudent to upgrade the machines and migrate to Windows 2003. The tight integration of 2003 and .Net will ease development while improving programmatic efficiency and reducing development time.

A number of additional systems are being upgraded in conjunction with the systems mentioned above. The systems being upgraded are out of date for the applications they are running and/or the applications themselves are to be updated. These include, but are not limited to, the online automated pedigree system, the Automated Patient Response system which allow phone based randomization to clinical trials, and teleforms which allows automated fax in data collection for a number of ACDC projects.

The infrastructure upgrade currently taking place is a critical part of the further development of the network. The network continues to be a test bed of new technologies that foster and enhance research. Much has been accomplished in 2004-05. Yet additional work remains to be done. With the global changes in weather and the need for more secure, uninterruptible systems, we have begun to develop more extensive backup plans, including assessing the need for alternative power sources, hot back up facilities and off site (and out of state) back up storage and the ability to restore operations.

REPORTABLE OUTCOMES:

Manuscripts, abstracts, presentations:

- Richesson RL, Andrews J, Krischer JP: Use of SNOMED CT to Represent Clinical Research Data: **A Semantic Characterization of Data Items on Case Report Forms in Vasculitis Research.** JAMIA 2006; 13:536-546.
- Andrews JE, Richesson RL, Krischer J: **Variation of SNOMED CT Coding of Clinical Research Concepts among Coding Experts** *JAMIA* 2007;14:497-506.
- Richesson RL, Krischer JP: **Data Standards in Clinical Research: Gaps, Overlaps, Challenges and Future Directions.** In Press: *JAMIA* 2007; 14(6).
- Richesson RL, Fung KW, Krischer JP: **Heterogeneous but "Standard" Coding Systems for Adverse Events: Issues in Achieving Interoperability between Apples and Oranges.** Under Review: *Contemp Clinical Trials*, August 2007.
- Richesson RL, Malloy JF, Paulus K, Krischer JP: **An Automated Standardized System for Managing Adverse Events in Clinical Research Networks.** Under Review: *Drug Safety*, August 2007.
- Richesson RL, Young K, Guillette H, Tuttle M, Abbondondolo M, Krischer J. **Standard Terminology on Demand: Facilitating Distributed and Real-time Use of SNOMED CT during the Clinical Research Process.** American Medical Informatics Association, Washington, D.C., November 11-15, 2006.
- Richesson R, Syed A, Guillette H, Tuttle MS, Krischer JP: **A Web-based SNOMED CT Browser: Distributed and Real-time Use of SNOMED CT During the Clinical Research Process.** MedInfo, Australia, August 2007.
- Krischer, J.: **Data Collecting from DTCC Perspective**, International Conference on the Nondystrophic Myotonias, Kansas City, Missouri, June 3, 2007.

- **Patents and licenses applied for and/or issued:**

  Development of the Moffitt Cancer Network

  A notice of disclosure has been filed with the USF office of patents in anticipation of the completion of a patent application.

- **Funding received based on work supported by this award:**

  The Data and Technology Coordinating Center for the NIH Rare Disease Network (PI: Jeffrey Krischer, Ph.D.)

  The Data Coordinating Center for the Study of the Environmental Determinants of Diabetes in the Young. (PI: Jeffrey Krischer, Ph.D.)

  Moffitt Community Clinical Oncology Program Research Base (PI: Jeffrey Krischer, Ph.D.)

CONCLUSIONS:

The Advanced Cancer Detection Center continues to be successful and, as it enters its final year, is focused on transitioning continuing projects to other sources of funding. The research has led

to publications, presentations and successful grant applications. All projects have been approved for human subjects both at the University of South Florida Institutional Review Board and at the DoD Human Subjects Review Committee, as appropriate.

The Advanced Cancer Detection Center has been successful in developing and implementing a variety of leading edge technologies over the past five years. We plan to continue developing new technologies as well as extending existing technologies that contribute to the improvement in quality of overall patient care and public health in its final year.